

2002 Fiscal Year Summary Foodborne Illness Surveillance

**Michigan Department of Agriculture
Food and Dairy Division**

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Summary

The Michigan Department of Agriculture maintains a database of reported foodborne illnesses and consumer complaints. This summary of reported events that occurred during the 2002 fiscal year is intended to help state and local food safety officials to better understand, monitor and prevent the causes of foodborne illness in Michigan.

Definitions:

Reports are characterized in one of four ways:

Alerts	complaints of foodborne illness involving one individual
Family associated illness	incidents involving two or more related persons with symptoms compatible with foodborne illness etiology
Isolated consumer complaints (ICC)	incidents of alleged adulteration of food or complaint of food quality
Foodborne illness (FBI) outbreak	incidents involving two or more unrelated cases having similar features or involving the same pathogen; single incidents of certain rare foodborne pathogens. (based on definition in Michigan Food Law, P.A. 92 of 2000, Section 3103)

Results:

<u>Incident type:</u>	<u>Number of incidents:</u>	<u>Number ill:</u>
Alerts	768	768
Family associated illness	298	742
Isolated consumer complaints	28	21
Foodborne illness outbreaks	209	1545
Total of food-related events	1303	3076

Discussion:

- Local health departments, the Michigan Department of Agriculture, the Michigan Department of Community Health and, on occasion, federal agencies, collaboratively investigated these reports and complaints.
- Gastrointestinal infections are not limited to foodborne transmission; they can be transmitted by person-to-person contact, contact with infected animals, contact with contaminated surfaces and through contaminated water. In smaller incidents, non-foodborne transmission often cannot be discounted.
- The total number of reported food-related complaints in FY 2002 is similar to CY 2000 and CY 2001 findings.
- In Figure 2, the month of February shows a significant increase of illness. This is attributed to a *Salmonella enteritidis* outbreak resulting in 196 illnesses. (See discussion under “Highlights of Outbreak Investigations.”)
- The leading causative agents identified for reported foodborne illness outbreaks (Table 2) were:

<u>Agent:</u>	<u># Ill:</u>	<u># of Events:</u>
<i>Salmonella spp.</i>	273	9
Norovirus	213	13

The causative agent was identified in only 13% of reported foodborne illness outbreaks. Identifying the causative agents of foodborne illness outbreaks is important because appropriate control strategies differ for various agents. For example, while ill humans are the reservoirs of Norovirus, both humans and raw foods of animal origin can carry *Salmonella spp.*

- A relatively few outbreaks accounted for a majority of the illnesses. Thirty-two outbreaks involving 10 or more person (15% of all reported outbreaks) accounted for 955 of illnesses (62% of all reported outbreak illnesses).
- The median size of reported outbreaks was 3 persons.
- The most frequently cited cause of reported foodborne illness outbreaks noted on CDC 52.13 forms was bare-hand contact by food handler/worker/preparer. (Figure 5)

- It is widely recognized that the number of reported foodborne illnesses represents a small fraction of the total cases that occur. Due to this under reporting and other factors, the number of foodborne illnesses reported cannot be interpreted as an indicator of the relative safety of foods in any jurisdiction. For example, four agencies (Oakland, Macomb, Wayne and Washtenaw) reported approximately 50% of foodborne illness outbreaks. These are large population centers and likely reflect concomitant investigation and surveillance efforts. (Figure 4 and Table 1)

Highlights of Outbreak Investigations:

1. Norovirus outbreaks were widespread throughout the United States this past year, and Michigan was no exception. A strain identified in 2002 has been termed the Farmington Hills strain, after Farmington Hills, MI where the first cases were identified. This strain was the identified cause of several recent cruise ship outbreaks. Noroviruses, formerly termed “Norwalk-Like Viruses” (NLV), were the most frequently identified etiological agent in foodborne outbreaks reported by Michigan’s local health departments during the year. A total of 13 Norovirus outbreaks involving 213 persons were reported. Norovirus outbreaks are typically caused when an infected foodhandler handles food in an unsanitary manner. The Michigan Food Law of 2000 contains important safeguards to reduce the risk of Norovirus outbreaks, including requirements related to employee health, hand washing, and preventing food contamination through contact with food worker hands.
2. Early detection and control of identified foodborne outbreaks remains a top priority for the Division throughout the year. In February and March 2002, an outbreak of *Salmonella* Enteritidis in Macomb County caused illness in 196 persons. Twenty-four persons required hospitalization. Illness was associated with consumption of cannolis and cassata cakes from a Macomb County full-service bakery. Staff from Macomb County Health Department, the Michigan Department of Community Health and MDA worked together on the investigation. Investigators documented sanitation and food handling deficiencies.
3. In June, thirty cases of laboratory confirmed *Salmonella* Anatum infections were identified among patrons or employees of two Southeast Michigan restaurants. Staff from Wayne County Health Department, Oakland County Health Department, the City of Detroit Health Department, MDCH and MDA formed the investigation team. No specific foods were epidemiologically associated with the outbreak. Both restaurants received produce from a common supplier. The outbreak ceased after measures were taken to improve restaurant sanitation and to prevent ill employees from handling food.

Reporting:

- MDA uses foodborne illness data to investigate emerging threats, to illustrate trends, and to ensure accurate reports are reflected on the state and national level.
- In certain cases, Termination Reports were accepted as substitutes for final reports. Termination Report forms are used in the following situations:
 - When events are determined not to be foodborne illness outbreaks after investigation
 - For incidents where complainants refuse to provide sufficient information to conduct a proper investigation
 - For incidents reported to agencies so late that an adequate investigation cannot be completed

When a Termination Report is completed, reasons for its use must be indicated on that form.

- Final reports or termination reports were received for 96% of reported foodborne illness outbreaks in fiscal year 2002.

Foodborne Illness Response Strategy Training (F.I.R.ST.)

In fiscal year 2002, staff from MDCH, MDA and local health collaborated to provide a series of two-day training sessions on successful foodborne illness outbreak investigations, with an emphasis on teamwork.

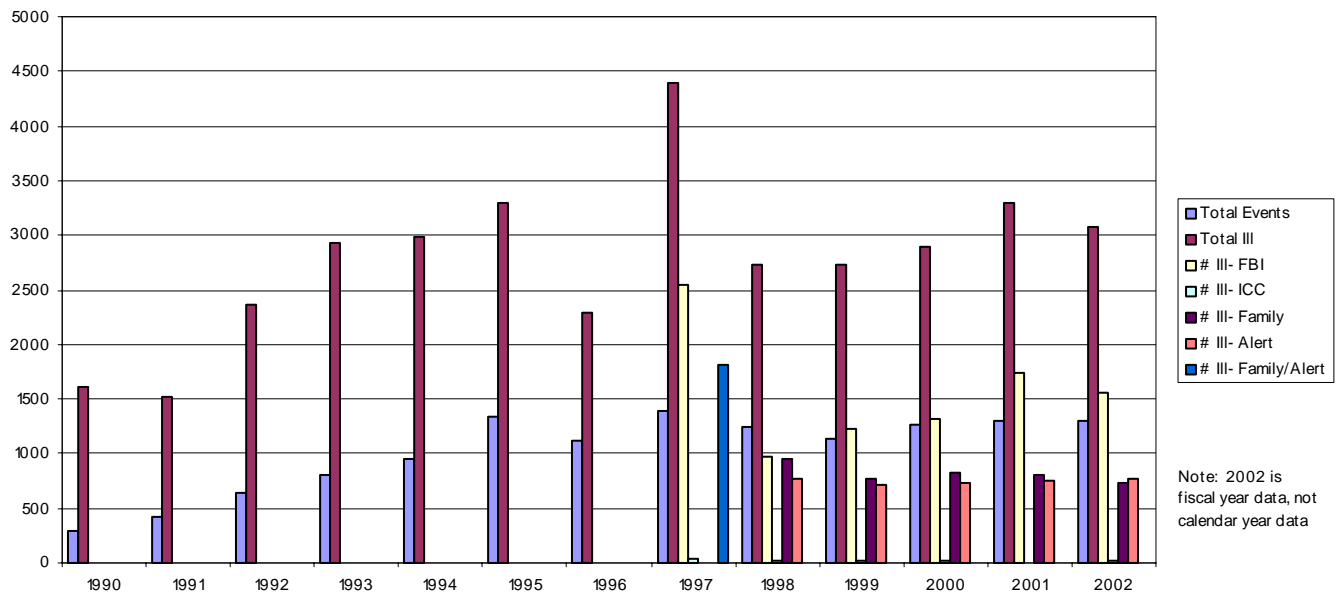
- Nine two-day training sessions were held throughout the state.
- Approximately 188 sanitarians, nurses and epidemiologists were trained.

Recommendations

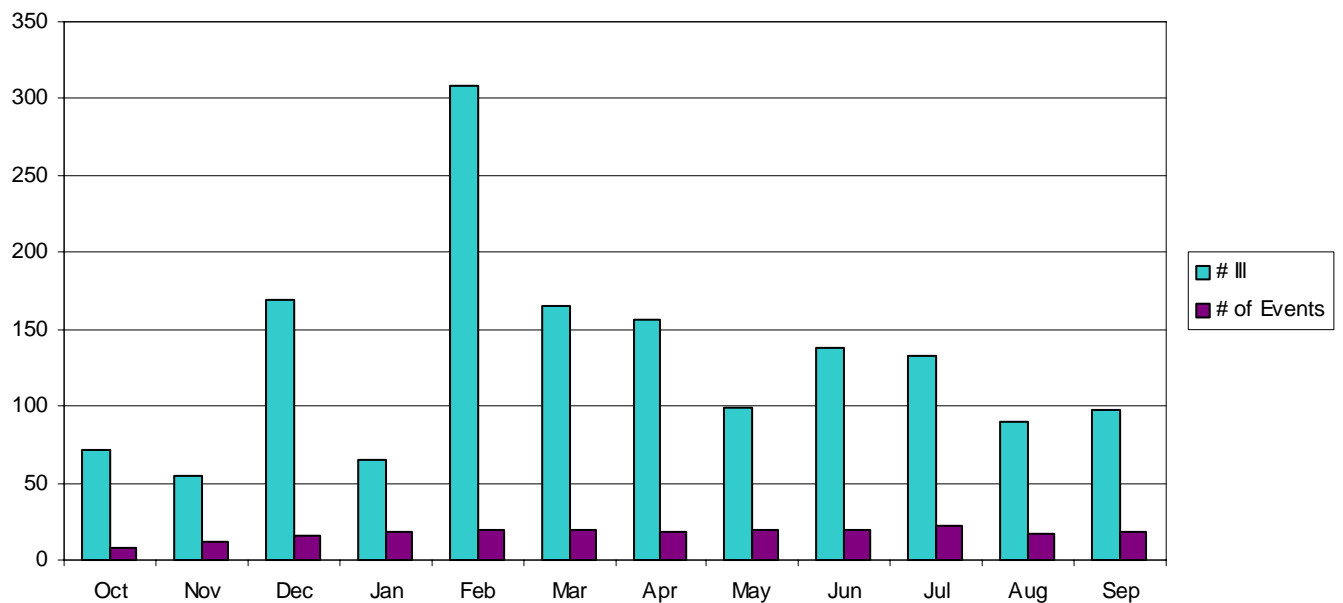
State and local food safety agencies should:

1. Ensure that staff investigating foodborne illness outbreaks:
 - a) are adequately trained before being assigned these tasks, and
 - b) maintain their skill through periodic participation in training programs focusing on outbreak investigation techniques.
2. Continue emphasis on minimizing bare-hand contact with ready-to-eat foods.
3. Evaluate the potential for cross-contamination within each facility.
3. Evaluate cooling practices to ensure rapid cooling of potentially hazardous foods (meets requirements in Sections 3-501.14 & 15 of the 1999 Food Code).
4. Identify higher percentages of etiologic agents causing foodborne illness outbreaks, through appropriate laboratory testing.

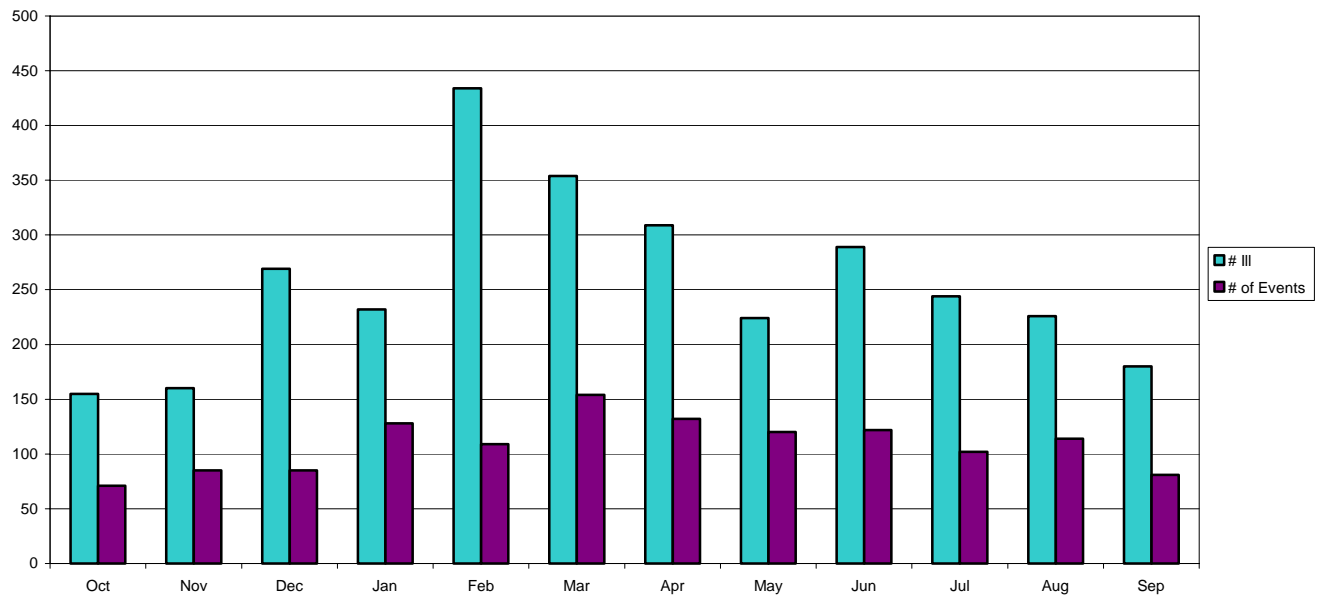
Summary of Food-Related Complaints by Type: 1990-2002



Fiscal Year 2002 Events Classified as Foodborne Illness Outbreaks, by Month



Fiscal Year 2002 Total Food-Related Complaints, by Month

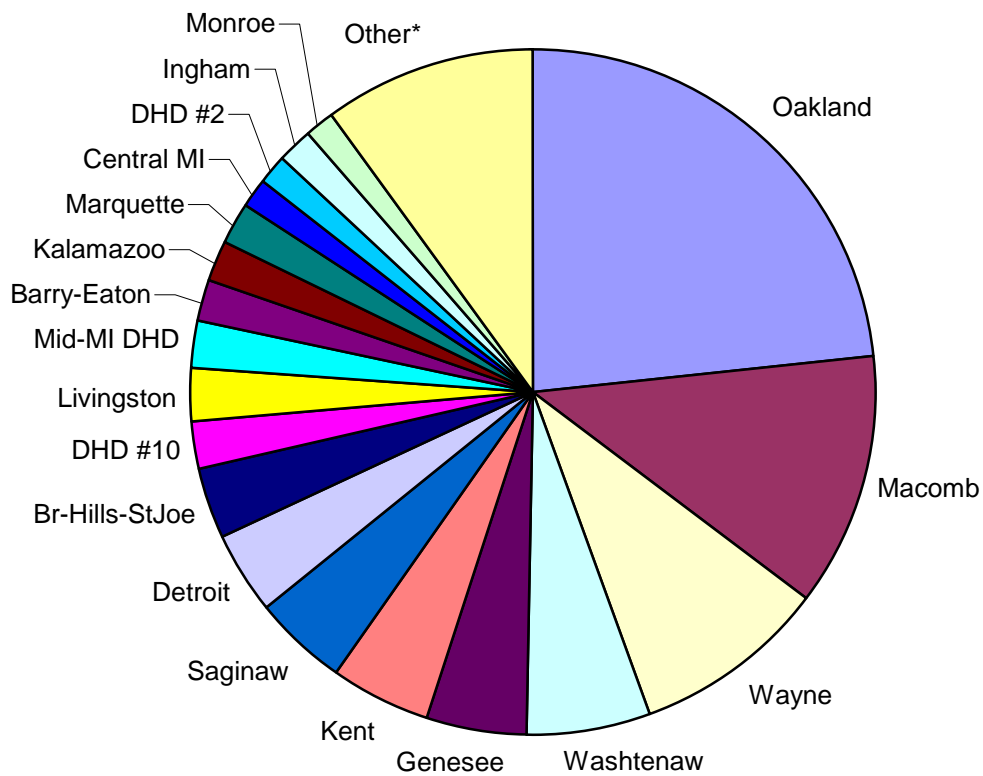


Foodborne Illness Events by Local Health Department

		% of	% of		% of Total	Reports	
Jurisdiction	FBI Events	Total FBIs	Total MI FSEs	Population	Population	Filed w/ State	Missing Reports*
Oakland	49	23.4	11.8	1,198,593	12.0	49	0
Macomb	25	12.0	6.1	799,954	8.0	25	0
Wayne	19	9.1	N/A	1,094,203	11.0	19	0
Washtenaw	12	5.7	2.7	326,627	3.3	11	1
Genesee	10	4.8	3.6	439,117	4.4	10	0
Kent	10	4.8	4.5	580,331	5.8	10	0
Saginaw	9	4.3	1.8	209,461	2.1	4	5
Detroit	8	3.8	N/A	951,270	9.5	8	0
Br-Hills-StJoe	7	3.3	1.4	154,749	1.5	7	0
DHD #10	5	2.4	2.5	231,785	2.3	2	3
Livingston	5	2.4	0.8	164,678	1.6	5	0
Mid-MI DHD	5	2.4	1.2	169,983	1.7	5	0
Barry-Eaton	4	1.9	1.3	162,498	1.6	4	0
Kalamazoo	4	1.9	1.5	238,544	2.4	4	0
Marquette	4	1.9	0.7	64,383	0.6	4	0
Central MI	3	1.4	1.6	188,089	1.9	3	0
DHD #2	3	1.4	0.6	70,211	0.7	3	0
Ingham	3	1.4	2.5	278,398	2.8	3	0
Monroe	3	1.4	1.1	147,946	1.5	3	0
Ionia	2	1.0	0.5	62,111	0.6	2	0
Delta-Menominee	2	1.0	0.8	63,723	0.6	2	0
DHD #4	2	1.0	1.1	83,157	0.8	2	0
Jackson	2	1.0	1.2	159,665	1.6	2	0
Midland	2	1.0	0.6	83,879	0.8	2	0
Muskegon	2	1.0	1.4	171,361	1.7	2	0
Bay	1	0.5	0.8	109,659	1.1	1	0
Berrien	1	0.5	1.6	161,820	1.6	1	0
Calhoun	1	0.5	1.0	138,031	1.4	1	0
Chippewa	1	0.5	1.0	38,413	3.8	1	0
Dept of Corrections	1	0.5	N/A	N/A	N/A	1	0
Lapeer	1	0.5	0.6	89,728	0.9	1	0
Ottawa	1	0.5	N/A	218,485	2.2	1	0
St. Clair	1	0.5	1.4	166,541	1.7	1	0
Tuscola	1	0.5	0.5	58,364	0.6	1	0
TOTAL	209	100.0					
Estimated Michigan Population = 9,990,817 (2001 est.)							
Michigan Foodservice Establishments = 46,610							
*As of February 21, 2003							
NOTE: The number of reported illnesses cannot be interpreted as indicating the relative risk or safety of food in any jurisdiction. See p. 4.							
Source: MDA Foodborne Illness Surveillance Database							

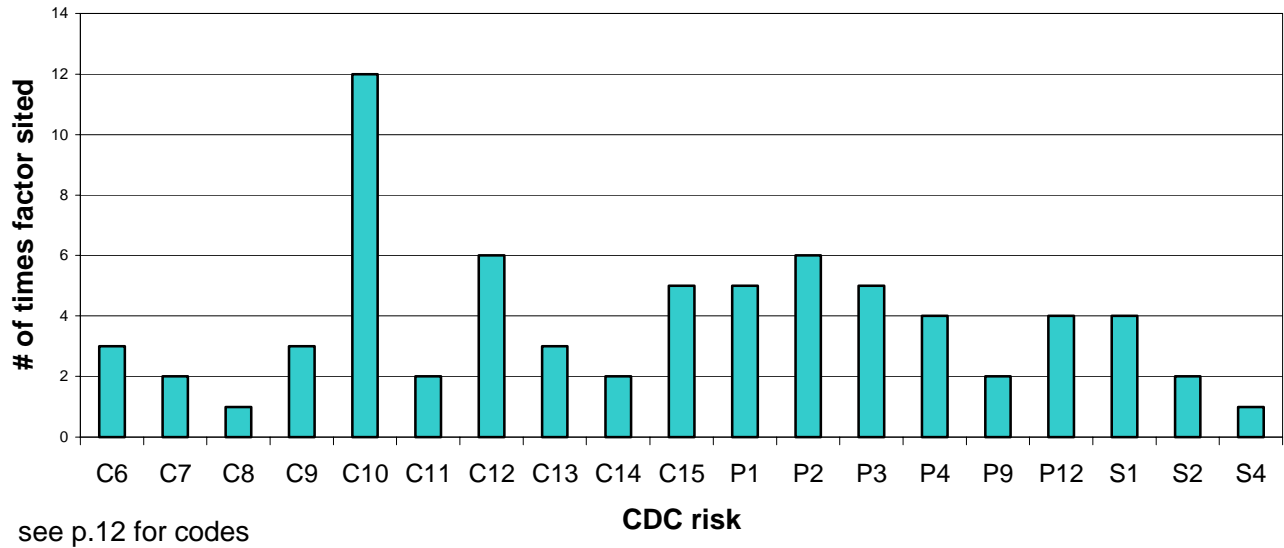
Foodborne Illness Events by Local Health Department

N = 209



Note: The number of reported events cannot be interpreted as indicating the relative risk or safety of food in any jurisdiction.

Factors Contributing to Fiscal Year 2002 Events Classified as Foodborne Illness Outbreaks, for Reports Citing a Primary Factor



The following codes are to be used to fill out Part 1 (question 9) and Part 2 (question 15).

Contamination Factors:¹

- C1 - Toxic substance part of tissue (e.g., ciguatera)
- C2 - Poisonous substance intentionally added (e.g., cyanide or phenolphthalein added to cause illness)
- C3 - Poisonous or physical substance accidentally/incidentally added (e.g., sanitizer or cleaning compound)
- C4 - Addition of excessive quantities of ingredients that are toxic under these situations (e.g., niacin poisoning in bread)
- C5 - Toxic container or pipelines (e.g., galvanized containers with acid food, copper pipe with carbonated beverages)
- C6 - Raw product/ingredient contaminated by pathogens from animal or environment (e.g., *Salmonella enteritidis* in egg, Norwalk in shellfish, *E. coli* in sprouts)
- C7 - Ingestion of contaminated raw products (e.g., raw shellfish, produce, eggs)
- C8 - Obtaining foods from polluted sources (e.g., shellfish)
- C9 - Cross-contamination from raw ingredient of animal origin (e.g., raw poultry on the cutting board)
- C10 - Bare-handed contact by handler/worker/preparer (e.g., with ready-to-eat food)
- C11 - Glove-handed contact by handler/worker/preparer (e.g., with ready-to-eat food)
- C12 - Handling by an infected person or carrier of pathogen (e.g., *Staphylococcus*, *Salmonella*, Norwalk agent)
- C13 - Inadequate cleaning of processing/preparation equipment/utensils - leads to contamination of vehicle (e.g., cutting boards)
- C14 - Storage in contaminated environment - leads to contamination of vehicle (e.g., store room, refrigerator)
- C15 - Other source of contamination (please describe in Comments)

Proliferation/Amplification Factors:¹

- P1 - Allowing foods to remain at room or warm outdoor temperature for several hours (e.g., during preparation or holding for service)
- P2 - Slow cooling (e.g., deep containers or large roasts)
- P3 - Inadequate cold-holding temperatures (e.g., refrigerator inadequate/not working, iced holding inadequate)
- P4 - Preparing foods a half day or more before serving (e.g., banquet preparation a day in advance)
- P5 - Prolonged cold storage for several weeks (e.g., permits slow growth of psychrophilic pathogens)
- P6 - Insufficient time and/or temperature during hot holding (e.g., malfunctioning equipment, too large a mass of food)
- P7 - Insufficient acidification (e.g., home canned foods)
- P8 - Insufficiently low water activity (e.g., smoked/salted fish)
- P9 - Inadequate thawing of frozen products (e.g., room thawing)
- P10 - Anaerobic packaging/Modified atmosphere (e.g., vacuum packed fish, salad in gas flushed bag)
- P11 - Inadequate fermentation (e.g., processed meat, cheese)
- P12 - Other situations that promote or allow microbial growth or toxic production (please describe in Comments)

Survival Factors:¹

- S1 - Insufficient time and/or temperature during initial cooking/heat processing (e.g., roasted meats/poultry, canned foods, pasteurization)
- S2 - Insufficient time and/or temperature during reheating (e.g., sauces, roasts)
- S3 - Inadequate acidification (e.g., mayonnaise, tomatoes canned)
- S4 - Insufficient thawing, followed by insufficient cooking (e.g., frozen turkey)
- S5 - Other process failures that permit the agent to survive (please describe in Comments)

Method of Preparation:²

- M1 - Foods eaten raw or lightly cooked (e.g., hard shell clams, sunny side up eggs)
- M2 - Solid masses of potentially hazardous foods (e.g., casseroles, lasagna, stuffing)
- M3 - Multiple foods (e.g., smorgasbord, buffet)
- M4 - Cook/serve foods (e.g., steak, fish fillet)
- M5 - Natural toxicant (e.g., poisonous mushrooms, paralytic shellfish poisoning)
- M6 - Roasted meat/poultry (e.g., roast beef, roast turkey)
- M7 - Salads prepared with one or more cooked ingredients (e.g., macaroni, potato, tuna)
- M8 - Liquid or semi-solid mixtures of potentially hazardous foods (e.g., gravy, chili, sauce)
- M9 - Chemical contamination (e.g., heavy metal, pesticide)
- M10 - Baked goods (e.g., pies, eclairs)
- M11 - Commercially processed foods (e.g., canned fruits and vegetables, ice cream)
- M12 - Sandwiches (e.g., hot dog, hamburger, Monte Cristo)
- M13 - Beverages (e.g., carbonated and non-carbonated, milk)
- M14 - Salads with raw ingredients (e.g., green salad, fruit salad)
- M15 - Other, does not fit into above categories (please describe in Comments)
- M16 - Unknown, vehicle was not identified

¹ Frank L. Bryan, John J. Guzewich, and Ewen C. D. Todd. Surveillance of Foodborne Disease III. Summary and Presentation of Data on Vehicles and Contributory Factors; Their Value and Limitations. *Journal of Food Protection*, 60; 6:701-714, 1997.

² Weingold, S. E., Guzewich JJ, and Fudala JK. Use of foodborne disease data for HACCP risk assessment. *Journal of Food Protection*, 57; 9:820-830, 1994.